NEW AMERICAN THYSANOPTERA

By Dudley Moulton

The present paper adds six new species of thrips to our North American fauna, five belonging to the genus *Frankliniella* Karny and one to the genus *Isochaetothrips* Moulton. A number of species belonging to this latter genus have been described from Australia and South America but the species included here is the first to be recognized from North America.

Frankliniella fulvus n. sp.

Female holotype: predominating color smoky brown including antenna, legs and wings, with antennal segments one, three, four and five lighter, the last three especially at their bases. Spines dark brown.

Total body length 1.32 mm., head length .117 mm., width .168 mm. Segments of antenna: III, 50 (20); IV, 50; V, 36; VI, 46; VII, 8; VIII, 10 microns. Length of spines: interocellar 46, postocular 30, on anterior angles of prothorax 63, on anterior margin 33, on posterior angles, outer 70, inner 83, on ninth abdominal segment, median 140, next adjoining 130, median on tenth 143 microns.

Pedicel of third antennal segment with distinct swelling in distal half. Spines on fore wings, fore vein 21, hind vein 17. Comb on eighth abdominal segment wanting.

Male allotype smaller and lighter in color, eighth abdominal segment armed as in *tritici*.

Type material: Female holotype, male allotype, 32 female and five male paratypes, taken in many wild and cultivated flowers. All types in author's collection (M. Nos. 2076, 2643).

Type locality, Fargo, North Dakota. Paratypes from Newton, New Jersey, South Dakota, Iowa, Illinois and Massachusetts.

This species may be separated from *tritici* Fitch by its brownish head, thorax, antennae and wings and by the longer prothoraic and terminal spines.

Frankliniella spinosus n. sp.

Female holotype: Color, uniformly clear yellowish including legs and wings, with thorax somewhat darker; antennal segments one to five and basal half of six clear yellow, distal half of six and style brownish yellow. All spines clear yellow.

Total body length .92 mm.; head length .09 mm., width .14 mm. Segments of antenna: length (width), I, 23; II, 33 (23); III, 46 (18); IV, 43; V, 36, VI, 46; VII, 10; VIII, 16; total 250 microns. Length of spines in microns: interocellar 48, postocular 26, on anterior angles of prothorax 53, on anterior margin 50, at posterior angles, outer 73, inner 73, on ninth abdominal segment, median 106, next adjoining 116, median on tenth 103.

Base of third antennal segment simple, all spines relatively long; spines on fore wings, fore vein 17, hind vein 13. Comb on eighth abdominal segment complete, long.

Male allotype similar in color and shape but smaller. Comb on eighth abdominal segment complete, median heavy short spines clear yellow, a smaller pair outward and posterior to these.

Type material: female holotype, male allotype, two female and one male paratypes, taken on corn May 10, 1924, by A. W. Morrill. Types in author's collection (No. 983).

Type locality: Cajeme, Mexico.

This species may be separated from *exigua* Hood by its clear yellow antennal segments one to five; in *exigua* two is brownish, and three to five are shaded distally. Also the major spines on thorax and tip of abdomen in *exigua* are brown.

Frankliniella inornatus n. sp.

Female holotype: color clear yellow including legs and wings with pterothorax and tip of abdomen shaded with dull orange. First antennal segment clear, two and six to eight brown, three yellow in basal half, light grayish brown in distal half, four and five yellowish in basal third, grayish brown in outer two-thirds. Spines brown. Ocellar crescents orange.

Total body length 1.16 mm., head length .106 mm., width .146 mm. Segments of antenna length (width), II, 33; III, 43 (20); IV, 40 (20); V, 33; VI, 46; VII, 6; VIII, 10 microns. Length of spines, interocellar 30, postocular 26, on anterior angles of prothorax 43, on anterior margin 43, on posterior angles outer 60, inner 63, on ninth abdominal segment median 73, next adjoining 76, median on tenth segment 100 microns.

Pedicel of third antennal segment simple, hind vein of fore wing with 15 spines, comb on eighth abdominal segment wanting in the middle.

Type material: female holotype and male allotype, taken in flowers of *Mangifera indica,* April 7, 1927 (L. C. Scaramuzza) (M. No. 1849). Types in author's collection.

Type locality, Baragua, Cuba.

This species is closely related to *occidentalis* Pergande but separated by the shorter and more compact antennal segments and shorter spines. It may be separated from *gilmorei* Morgan by the brown coloring of antennal segments, two to five; these are yellow in *gilmorei.*

Frankliniella andrei n. sp.

Female holotype: color blackish brown including all segments of antennae; legs dark brown with all tarsi and tips of all tibiae lighter, yellowish brown; wings pads brown.

Total body length .95 mm.; head length .093 mm., width .146 mm. Segments of antenna length (width) II, 33 (24); III, 46 (20); IV, 40; V, 36; VI, 50; VII, 10; VIII, 13 microns. Length of spines: interocellar 50, postocular 33, on anterior angles of prothorax 60, on anterior margin 53, on posterior angles 60–66, on posterior angles of ninth abdominal segment 106, median dorsal 100, on tenth segment 120 microns.

Wings reduced to pads. Comb on eighth abdominal segment complete but irregular, the setae arising from enlarged irregular bases, sometimes two or three setae from a single base.

Type material: female holotype and eight female paratypes taken from moss, November to December, 1932, 1933, at Waterville, Ottumwa and McGregor, Iowa. Named in honor of the collector, Mr. Floyd Andre. Types in author's collection (No. 5185).

Andrei is most closely related to *obscurus* Moulton but is separated by its lighter colored tarsi and tips of all tibiae, shorter spines on prothorax and by irregular and partially incomplete comb on eighth abdominal segment.

Frankliniella grandis n. sp.

Female holotype: Head and thorax yellowish brown with legs of similar color but with femora and tibiae darkened at the sides. Antennal segments two and six to eight dark brown, one and three to five lighter with four and five darkened in outer portions. Fore wings uniformly brown, spines brown. Abdomen dark brown with segments nine and ten darkened at the sides but lighter in the middle.

Total body length 1.5 mm.; head length .117 mm., width .176 mm. Segments of antenna, length (width) III, 60 (23); IV, 53; V, 40; VI, 56; VII, 10; VIII, 15 microns. Length of spines: interocellar 66, postocular 43, on anterior angles of prothorax 93, on anterior margin 90, on posterior angles outer, 93, inner 100, on ninth abdominal segment median 123, next adjoining 150, median on tenth 150 microns.

Pedicel of third antennal segment simple as in *intonsa* Trybom. Spines on fore wings, fore vein 19, hind vein 14. Comb on eighth abdominal segment complete but short. Several paratypes are uniformly light brown but with antenna and tip of abdomen dark colored as in the holotype.

Male allotype smaller and much lighter in color.

Type material: Female holotype, male allotype and seven female paratypes taken on wild sunflower, wild aster and golden rod in August, 1927 (J. C. Munro) (M. No. 2267, 2270). All types in author's collection.

Type locality, Fargo, North Dakota.

This species has the general color and appearance of *fulvus* Moulton but is easily separated by the simple pedicel of third antennal segment and the much longer spines on anterior margin of prothorax. It belongs in the *occidentalis* group but is distinguished by the longer terminal body spines.

Isochaetothrips davidsoni n. sp.

Female holotype: Color dark brown including all femora, middle and hind tibiae and antennal segments 1, 2, 6–8; with 2 somewhat lighter at the tip and 6 at the base; segments 3 and 4 clear yellow, 5 light yellowish brown; fore tibiae yellow but darkened on the sides, all tarsi yellow; wings uniformly light brown; prominent body spines brown, those on wings almost clear.

Total body length 1.1 mm.; head length .096 mm., width .13 mm.; prothorax length .153 mm., width .18 mm.; antennal segments length (width) I, 16 (25); II, 30 (23); III, 43 (20); IV, 36 (21); V, 50 (16); VI, 43 (16); VII, 10; VIII, 13 microns. Length of spines: all head spines minute, on posterior angles of prothorax, outer 40, inner 33 (?), median spines on metanotum 50, on posterior angles of ninth abdominal segment 113, median dorsal, 66, in tenth segment 100 microns.

Sides of head straight and almost parallel. Spines on posterior angles of prothorax short, series of five on either side along posterior margin inward from angle spines with second and fourth distinctly longer. Median spines on metanotum long, placed immediately behind anterior margin and 20 microns apart. Comb on eighth abdominal segment complete but sparse, composed of about ten setae, these with enlarged bases. Tip of abdomen narrowed and pointed. Fore wings with three basal followed by 15 evenly placed spines, hind vein with 14 spines.

This is the first member of this genus to be recorded from North America and may be separated from *unicolor* Moulton, found in South America, by the clear yellow third and fourth antennal segments, these are uniformly light brown in *unicolor*.

Type material: female holotype taken August 22, 1928, (V. G. Davidson), from an unknown host. Type in author's collection (No. 3343).

Type locality: Craters of the Moon, Idaho.

A Note on the Genus Trigonurus Muls.—In checking over Dr. Van Dyke's very excellent revision, published in the Bull. Brook. Ent. Soc., Dec., 1934, p. 177, I find that we have a series of fourteen of his *Trigonorus dilaticollis*. This was described from an unique specimen taken under the bark of the coast redwood, *Sequoia sempervirens*. One of our specimens was taken at Pender Harbour, B. C., in 1928, and thirteen in 1933 at Steelhead, B. C. This would suggest a distribution from B. C. to California in the coastal region, and other hosts, as the Sequoias, are not found in B. C.—Ralph Hopping, Vernon, B. C.